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# CONTROL OF GROUND SQUIRRELS IN CALIFORNIA USING ANTICOAGULANT TREATED BAITS

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**ABSTRACT:** Anticoagulant treated grain baits have been used to control vertebrate pest depredations in California for over 30 years. The use of anticoagulant treated baits has increased seven (7) times in the past seven (7) years; the majority for the use of ground squirrel, *Spermophilus* spp., control. Since 1968-69, an average of 1,747,828 net over 5,700,919 gross acres per year has been treated for ground squirrel control.

Current use patterns for ground squirrel control with anticoagulant treated baits include: (1) Repeated spot baitings, and (2) exposure of bait in bait boxes.

Experimental work and many years of operational field use have proven that anticoagulant treated baits have a place in effectively suppressing ground squirrel populations in localized areas, with little hazard to nontarget animals. However, these baits have not proven to be a practical substitute for current techniques of suppressing ground squirrel populations over large areas, such as in rangeland situations.

## GROUND SQUIRREL CONTROL IN CALIFORNIA

California is fortunate to have a unique system of county agricultural commissioners in 56 of the 58 counties in the State. The agricultural commissioner, with his staff of trained agricultural inspectors and biologists, is responsible for a variety of regulatory enforcement duties and related activities. Among these duties may be that of conducting vertebrate pest control activities, including controlling ground squirrel depredations.

The county agricultural commissioners expend in excess of \$3 million annually for vertebrate pest control operations (California Department of Food and Agriculture, 1977c). Ground squirrels continue to be one of the major vertebrate pests to California's agriculture. Dana (1971) reported that the estimated loss from ground squirrels in California to be \$8 million annually.

Records show that since 1968-69, agricultural commissioners treated an average of 1,747,828 net over 5,700,919 gross acres per year for ground squirrel control (California Department of Food and Agriculture, 1977a). Control techniques include the use of grain baits treated with Compound 1080, zinc phosphide, strychnine, or one of the anticoagulants. In addition, in excess of 100,000 pounds of the fumigants carbon bisulfide, methyl bromide, and U.S. Fish and Wildlife Service gas cartridges are used (California Department of Food and Agriculture, 1977a).

Other than those baits formulated and dispensed by the county agricultural commissioners, the one bait available commercially, and used to any extent is Ramik Green, a 0.005 percent diphacinone treated pellet, manufactured by Velsicol Chemical Company. The Chempar Chemical Company also has registered a 0.005 percent Chlorophacinone treated pellet for ground squirrel control.

## ANTICOAGULANTS USED IN CALIFORNIA

Anticoagulant treated baits have been used in California to reduce depredations caused by vertebrate pests for nearly 30 years. Field testing of Compound 42 (warfarin) for ground squirrel control began in California in 1949 (Ball, 1949). In 1950, a little over one (1) ton of anticoagulant treated bait was used for ground squirrel control (Ball, 1950).

The agricultural commissioners were quick to incorporate into their vertebrate pest control programs new toxicants and techniques that would offer greater safety to nontarget animals, even though they realized the use of anticoagulants would increase costs by using more bait and requiring more labor to place and service bait boxes. Cummings (1953) reports that by early 1953 satisfactory control of ground squirrels was being obtained by county personnel in Santa Barbara and Ventura counties. By 1954, nearly 24 tons of warfarin and pival treated grain bait was used to control ground squirrel depredations (Ball, 1954).

Records compiled by the California Department of Food and Agriculture (1977a) show a steady increase in the use of anticoagulants for vertebrate pest control (Table 1). In 1968-69, the agricultural commissioners reported using nearly 76 tons of anticoagulant treated grain bait. In 1975-76, the use reached a high of nearly 535 tons of anticoagulant treated grain bait. This is a seven (7) fold increase in as many years. In the past four years an annual average of about 174 tons of anticoagulant treated baits were used to control depredations of other vertebrate pests, but the majority of the total used was for ground squirrel control.

The use of anticoagulant treated baits seems to be leveling off. The use in 1976-77 was down nearly 90 tons from the previous year.

It is interesting to note that the use of anticoagulants in 1976-77 was 2.8 times greater than zinc phosphide treated baits, and nearly 1.8 times greater than Compound 1080 treated grain baits.

The annual average acreage treated for ground squirrels by agricultural commissioners has remained relatively constant. Since 1968-69, the annual average of acres treated for ground squirrels has been 1,747,828 net over 5,700,919 gross acres.

Table 1. Use of anticoagulant treated baits in California.

Fiscal Year	Tons of Treated Bait Used			Acres Treated For Ground Squirrels	
	Anti-coagulant	Compound 1080	Zinc Phosphide	Net	Gross
1949	*	--	--	--	--
1950	1.31**	--	--	--	--
1954	23.96**	--	--	--	--
1968-69	75.97	193.15	143.29	2,531,313	6,221,078
1969-70	83.65	234.87	113.75	2,533,805	6,440,618
1970-71	87.82	206.21	133.97	1,986,661	5,856,935
1971-72	180.09	321.13	126.48	2,979,361	7,825,139
1972-73	NO RECORDS AVAILABLE				
1973-74	291.13	97.06	101.35	814,578	4,482,173
1974-75	517.45	101.05	160.15	975,566	3,881,683
1975-76	534.98	322.34	96.52	1,235,482	5,383,715
1976-77	445.46	254.87	158.49	925,856	5,516,009
TOTAL	2,216.55	1,730.68	1,034.00	13,982,622	45,607,350
AVERAGE	277.07	216.34	129.25	1,747,828	5,700,919

\* Field testing occurred.

\*\* Not used in computing average annual use.

In California, anticoagulant treated grain baits have found a definite place in vertebrate pest control operations in spite of the increased costs for labor and materials.

#### KINDS OF ANTICOAGULANTS USED

Early use patterns have gradually shifted from Compound 42 and pival to the use of other anti-coagulants. As of May 2, 1977, the Pesticide Registration Number Book (California Department of Food and Agriculture, 1977b) indicates that twenty-eight (28) of the agricultural commissioners have some type of anticoagulant treated bait registered for ground squirrel control. Some have more than one type of anticoagulant registered. The number of county registrations for the particular type of anticoagulants include: 23 diphacinone, 1 chlorophacinone, 5 pival, 1 warfarin, and 1 prolin.

Not included in these tabulations are recently registered labels under the special local needs 24 (c) regulations of FIFRA.

#### EXPERIMENTAL WORK

Using caged squirrels, Spermophilus b. beecheyi, in nonchoice feeding trials Marsh (1964) concluded that diphacinone and pival treated squirrel oat groats gave the best control. This judgment was based on bait that caused death within the shortest period of time and showed the least tendency for the squirrels to recover. Prolin, warfarin, and fumarin treated baits appeared inconsistent for ground squirrel control. All baits were mixed at the 1:16 ratio with commercial concentrates.

In these limited trials, death occurred in the five animals feeding on diphacinone treated bait in an average of 10.4 days (range six to 13) and each consumed an average of 144.96 gm (range 110.6 to 205.4) of bait. The five squirrels feeding on pival treated bait died in an average of 10.4 days (range five to 14) and consumed an average of 180.06 gm (range 88.5 to 271.1) of bait.

Kreps and Dixon (1975) conducted a field trial comparing the effectiveness of 0.005 percent and 0.01 percent diphacinone treated grain bait for ground squirrel, Spermophilus b. beecheyi, control. The reduction of ground squirrel activity in the plot with 0.005 percent diphacinone treated bait was 91.7 percent. Reduction in activity in the plot with 0.01 percent diphacinone treated bait was 95.8 percent.

In this trial grain baits were exposed in bait stations made from used automobile tires cut across the diameter and wired closed so the beads were touching. The stations were placed in a grid 200 feet apart in four (4) acre sized plots. Bait was replaced on an "as needed" basis. Ground squirrels accepted the bait within 24 hours in the (nontreated) control area and in the 0.005 percent diphacinone area. Acceptance at all stations in the 0.01 percent diphacinone plot occurred within six (6) days. The highest live squirrel counts in both treated plots was 48 (12 per acre). Total bait consumption in the 0.005 percent diphacinone plot was 300 pounds. One-hundred twenty (120) pounds of bait was consumed in the 0.01 percent diphacinone plot. Five-hundred forty (540) pounds of untreated bait were consumed in the control plot. Consumption based on maximum live squirrel counts, within each plot, was 20 pounds per squirrel in the untreated plot, 6.25 pounds per squirrel in the 0.005 percent diphacinone plot, and 2.5 pounds per squirrel in the 0.01 percent diphacinone plot.

Undoubtedly, quantities of bait were cached by the squirrels, and the amounts calculated do not necessarily represent minimum lethal doses.

Within the test areas, the number of squirrels found to have died on top of the ground were: 78 in the 0.005 percent diphacinone plot, 26 in the 0.01 percent diphacinone plot, and 48 in the untreated plot. It was assumed that dead squirrels found above ground within the control area was due to the 0.005 percent diphacinone bait because no squirrels were observed moving into the other plots.

Within the 0.005 percent diphacinone test area, only one dead nontarget animal, blacktailed jackrabbit, Lepus californicus, was found containing the DuPont Oil Blue A Dye used on the grain bait. Within the 0.01 percent diphacinone area, one dead Brewer's blackbird, Euphagus cyanocephalus, was found. No blue dye was present in this bird.

Within the untreated plot, two dead deer mice, Peromyscus maniculatus, were found; both without blue dye. No other nontarget dead animals were found. Numerous species of other apparently healthy wildlife were observed throughout the area during the trial.

Kreps and Dixon concluded that, even though replicated tests are needed, the 0.01 percent diphacinone concentration seems superior to the 0.005 percent diphacinone, because there was lower secondary hazard with less dead animals found on top of the ground, lower grain consumption, and less toxic bait was needed.

Marsh and Howard (1975b) conducted laboratory and field trials with California ground squirrels, Spermophilus beecheyi beecheyi, using Ramik. Where Ramik was offered in the presence of Purina Laboratory Chow, 16 out of 20 squirrels died in a 31-day test. The minimum amount of Ramik consumed, which produced death, was 61.7 grams with death occurring on the 5th day of exposure. The maximum bait consumed was 265.1 grams, with death occurring on the 26th day of exposure. One female squirrel consumed 257.6 grams during the 31-day exposure period, and survived.

On a mg/kg basis, the minimum diphacinone ingested to produce death was 0.93 mg/kg. The minimum intake of a surviving squirrel was 3.59 mg/kg, and the maximum intake of any surviving squirrel was 6.57 mg/kg.

The average Ramik intake of 144.4 grams per squirrel was not appreciably lower than the average intake of Laboratory Chow which was 176.8 grams. Ten out of the 20 squirrels in this test group consumed more Ramik than Purina Laboratory Chow, though the squirrels had previously been conditioned to the Laboratory Chow prior to the start of the test. None of these squirrels survived the test. The range of days to death of the 16 squirrels that died was five to 26, with an average of 12.1.

With another 30-day test group of squirrels, which received a free choice of Ramik and oat groats, 14 (70 percent) out of 20 squirrels succumbed. The minimum amount of Ramik consumed that produced death was 41.7 grams, and the maximum amount consumed that did not produce death was 159.4 grams.

On a mg/kg basis, the minimum amount of diphacinone to produce death was 2.41 mg/kg. The minimum intake of a surviving squirrel was 1.13 mg/kg, and the maximum intake of any surviving squirrel was 12.38 mg/kg. Four females and two males survived the test. This and the previous test suggest that the females may be slightly less susceptible than the males. The average number of days to death was 22.1 (range seven to 32).

The average amount of Ramik consumption was 112.7 grams per squirrel, and the average amount of oat groat consumption was 347.2 grams per squirrel. Three out of 20 squirrels consumed more Ramik than the challenge diet of oat groats.

All squirrels in one group (five males and five females), which received Ramik in a no choice feeding situation, died. One-hundred percent mortality was achieved in 21 days, with death ranging from five to 21 days (average was 10).

The minimum of active diphacinone consumed by any squirrel was 9.81 mg/kg, and the maximum 99.82 mg/kg. The average amount of Ramik consumed, per squirrel, was 227.4 grams.

In field evaluations, Marsh and Howard (1975a) obtained 100 percent reduction in ground squirrel activity when Ramik was exposed for 30 days. At one treatment site, 19 days passed before ground squirrels began utilizing bait stations.

Salmon (1976) demonstrated 100 percent decrease in activity of ground squirrels, Spermophilus beecheyi beecheyi, in a field trial using Ramik. Significant bait acceptance did not commence until 11 days after Ramik was exposed. Salmon felt that 15 to 25 days exposure was necessary to achieve adequate control. Much of this time, up to 13 days, may be wasted because of the animal's reluctance to enter and feed from bait stations.

The Belding ground squirrel, Spermophilus b. beldingi, and S. b. oregonus, is not the seed-eater that the California ground squirrel is (Clark, 1975). Sauer (1976) attempted to use this habit to effect control of S. b. oregonus by broadcasting chopped cabbage at 10 pounds per acre treated with chlorophacinone at 0.01 percent and 0.005 percent and, fumarin at 0.05 percent and 0.025 percent.

In these trials, the baits failed to reduce the ground squirrel population. The lack of control was attributed to too rapid of bait consumption, or under baiting. The squirrels were not able to consume the bait over a long enough period of time to be lethal.

A 0.01 percent chlorophacinone treated chopped cabbage bait applied by hand, twice in three days, looked promising for effective squirrel control.

A 0.01 percent chlorophacinone treated squirrel oat groat bait and a 0.05 percent fumarin treated squirrel oat groat bait, broadcast at 10 pounds per acre, appeared effective in reducing squirrel populations after six days. These same baits, when applied in teaspoon amount near active burrows on two consecutive days, also appeared effective in controlling ground squirrels.

Sauer (1976) also found that automobile tire bait stations, baited with treated grain baits, could be effective in reducing ground squirrel populations. In his trials it took a week for squirrels to use all the stations, but later found as high as eight squirrels using one station at once. With bait stations placed at 200-foot intervals on a grid pattern, 97 percent activity reduction was obtained with 0.01 percent chlorophacinone-treated grain bait, and 86 percent reduction with 0.005 percent chlorophacinone bait. At this same spacing, fumarin treated bait at 0.025 percent and 0.05 percent reduced the activity by 74 percent and 73 percent respectively.

Using *S. beldingi oregonus*, Marsh and Howard (1976), in a 30-day test offered Ramik in a free-choice situation with the challenge diet of Purina Laboratory Chow. Nineteen out of 20 squirrels died, for a mortality of 95 percent. Time of death ranged from four to 22 days and the average number of days to death was 10.4. This test was conducted in the early summer when ground squirrel control would normally be conducted. They believed that comparable results would be achieved under field conditions.

The minimum amount of Ramik consumed, which produced death, was 58.5 grams with death occurring on the 4th day of exposure. The maximum bait consumed was 237.7 grams, with death resulting on the 22nd day. The only surviving male consumed 234.8 grams of Ramik or 29.03 mg/kg of diphacinone.

The minimum amount of diphacinone to produce death was 10.30 mg/kg and the maximum intake of any squirrel was 37.03 mg/kg.

The average Ramik intake (147.8 grams) per squirrel substantially exceeded the average Purina Laboratory Chow intake (23.42 grams). Purina Lab Chow, although a nutritionally balanced diet to which the squirrels had been conditioned through previous exposure, does not rank high as a preferred food for squirrels. The difference in consumption between Ramik and Lab Chow is not surprising, but does indicate that Ramik is adequately accepted by Belding's ground squirrels.

No deaths occurred in the squirrels retained as reference (control) animals, which were not offered the toxic bait.

#### CURRENTLY USED TECHNIQUES

The Control and Eradication Unit of the California Department of Food and Agriculture has registered with the Environmental Protection Agency under 24 (c) provisions of FIFRA, eight (8) specimen labels (APPENDIX 1 thru 8) specifying several different anticoagulants for ground squirrel, *Spermophilus beecheyi* and *S. beldingi*, control. These labels are in turn being registered by various county agricultural commissioners for the baits that they formulate and use in their county vertebrate pest control programs.

A 0.01 percent concentration of diphacinone or chlorophacinone treated grain bait is registered for ground squirrel control, using a repeated spot treatment method. The bait is scattered in handful quantities (about 10 baits per pound) evenly over 40 to 50 square feet of area near active burrows or runways. Bait application is to be repeated every other day for three or four applications. Each treatment bait should be placed in the same area as previous baiting to allow multiple feedings to occur.

The type of bait box used to expose anticoagulant baits is only limited by one's imagination. Cummings (1953) described the commonly used bait box as being three- to four-foot lengths of four- to six-inch diameter irrigation pipe. A hole was often cut through the top of the pipe. Bait was then poured through the hole. Plastic, concrete, aluminum, or drain tile pipes of similar dimensions are currently used as bait boxes for ground squirrel control.

Keyes (1952) describes a bait box he designed in which to expose anticoagulant bait primarily for forest rodents. This box was a special out-door box of one-inch redwood, sufficiently large to withstand rough usage. The entrance was through a tunnel at the back of the box. An automatic feeding bin, holding up to four pounds of the prepared bait, provided a constant source of bait into a manger at the bottom of the box. Entrance through the back of the bait compartment was through two-inch openings. Nothing but rodents could gain access to the baits. Children could not reach through to the bait. All boxes were provided with lock and key.

This basic design has been modified for use with ground squirrels (Clark, 1967).

A type of bait box constructed from a discarded automobile tire is widely used. Tires are cut across their diameter and wired so that the beads are touching. One tire makes two stations. Complete tires with a hole, about four inches in diameter, cut in the top to allow for baiting and serve as the entrance for the squirrels are sometimes used. Another variation is to use a complete tire and simply prop open the inside bead, about four inches, with a piece of wood or similar material. The half tire bait station seems to be one of the most popular and effective methods of exposing anticoagulant treated grain baits.

The following anticoagulants are registered for use in bait boxes: 0.005 percent diphacinone or chlorophacinone treated grain bait; 0.025 percent warfarin, pival, fumarin, or prolin treated grain bait.

Covered bait boxes containing one to five pounds of bait are placed in areas frequented by ground squirrels (near runways, burrows, etc.). Bait must be kept in the bait boxes until all feeding ceases, which may be one to four weeks. Initial acceptance of the bait may not occur until the squirrels become accustomed to the bait box, which may be several days. The bait stations should be secured so that they cannot be turned over.

In addition to ground squirrels, the above mentioned labels include uses for control of deer mice, *Peromyscus* spp.; house mice, *Mus musculus*; Norway rats, *Rattus norvegicus*; roof rats, *R. rattus*; muskrats, *Ondatra zibethica*; jackrabbits, *Lepus californicus*; meadow mice, *Microtus* spp.; and wood rats, *Neotoma* spp.

There have been few reports of secondary poisoning of nontarget animals as a result of using anticoagulant treated grain baits for ground squirrel control. With many pet foods being manufactured with cereal grains forming their base, pets are quite accustomed to feeding on grain products. It is doubly important to take necessary precautions to avoid pets gaining access to exposed grain baits.

#### CONCLUSION

The use of anticoagulant-treated baits has proven effective in reducing or in some cases completely eliminating localized populations of ground squirrels.

As tighter restrictions are placed on the use of acute rodenticides, there may well be an even greater use of anticoagulant treated baits for ground squirrel control. However, anticoagulant treated grain baits are not a panacea. I feel, because of increased costs, their use cannot compete with such techniques as aerial application of Compound 1080 treated grain baits in rangeland situations for ground squirrel control.

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## PRECAUTIONARY STATEMENTS

### Hazards to Humans and Domestic Animals

#### CAUTION

Keep out of the reach of children and pets.  
Treated baits should be placed in locations not accessible to non-target wildlife and domestic animals, or in tamper-proof bait boxes.  
If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

#### ENVIRONMENTAL HAZARDS

This product is toxic to wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. Treated bait exposed on soil surface is hazardous to birds and other wildlife. Keep out of lakes, ponds, and streams.

#### DIRECTIONS FOR USE

### GENERAL CLASSIFICATION

FOR DISTRIBUTION AND USE ONLY IN CALIFORNIA.

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling. (See Baiting Procedures)

#### STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food, or feed by storage or disposal.

**Container Disposal:** Dispose of in an incinerator or landfill approved for pesticide containers.

**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

#### IMPORTANT

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

## RODENT BAIT

### DIPHACINONE TREATED GRAIN (0.01%)

#### ACTIVE INGREDIENT:

Diphacinone	
2-Diphenylacetyl-1,	
3-indandione	0.01%
INERT INGREDIENTS	99.99%
TOTAL	100.00%

## KEEP OUT OF THE REACH OF CHILDREN

### CAUTION

#### FIRST AID TREATMENT

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

EPA SLN No. ....

Calif. Reg. No. ....

Net Contents ..... lbs.

CALIFORNIA  
DEPARTMENT OF FOOD & AGRICULTURE  
CONTROL AND ERADICATION  
1220 N Street, Sacramento, CA 95814

#### BAITING PROCEDURES

NOTE: Do not use in a manner that will contaminate feed or foodstuff.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beldingi*** - Scatter a handful of bait (about 10 baits per pound) evenly over 40 to 50 square feet near active burrows or runways. Retreat every other day for 3 to 4 applications.

An uninterrupted supply of bait should be available for 6 to 8 days. Don't pile bait. The scattering of bait takes advantage of the squirrels' natural foraging habits and limits domestic livestock and wildlife from picking it up.

**DEER MICE, *Peromyscus* spp.** - Deer Mouse Control in Forests: Spread bait evenly by hand, mechanical spreader, or aircraft at the rate of two pounds per acre through the area where seeding will later take place. Sufficient bait should be applied to last the mouse population a minimum of four days (preferably without rain). Bait application should precede the sowing of conifer seed by 10 days to 2 weeks.

**HOUSE MICE, *Mus musculus*** - Place tablespoon amounts (1/4 to 1/2 ounce) of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. Inspect stations daily and add bait as needed; increase the amount when bait in feeder is entirely consumed overnight. Replace moldy or old bait with fresh bait. The baits being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be 2 to 4 weeks.

Where continuous source of infestations is present, permanent bait stations should be established and the bait replenished as needed. Bait should be picked up and disposed of upon termination of control program.



**PRECAUTIONARY STATEMENTS**  
**Hazards to Humans and Domestic Animals**

**CAUTION**

Keep out of the reach of children and pets.  
Treated baits should be placed in locations not accessible to non-target wildlife and domestic animals, or in tamper-proof bait boxes.

If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

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**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

**IMPORTANT**

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

**RODENT BAIT**  
**CHLOROPHACINONE TREATED GRAIN (0.01%)**

**ACTIVE INGREDIENT:**

Chlorophacinone  
2-[(p-chlorophenyl) phenyl-  
acetyl] 1,3-indandione ..... 0.01%  
**INERT INGREDIENTS** ..... 99.99%  
**TOTAL** ..... 100.00%

**KEEP OUT OF THE  
REACH OF CHILDREN**

**CAUTION**

**FIRST AID TREATMENT**

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

EPA SLN No. ....

Calif. Reg. No. ....

Net Contents ..... lbs.

**CALIFORNIA**  
**DEPARTMENT OF FOOD & AGRICULTURE**  
**CONTROL AND ERADICATION**  
1220 N Street, Sacramento, CA 95814

**BAITING PROCEDURES**

**NOTE:** Do not use in a manner that will contaminate feed or foodstuff.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beldingi*** - Scatter a handful of bait (about 10 baits per pound) evenly over 40 to 50 square feet near active burrows or runways. Retreat every other day for 3 to 4 applications.

An uninterrupted supply of bait should be available for 6 to 8 days. Don't pile bait. The scattering of bait takes advantage of the squirrels' natural foraging habits and limits domestic livestock and wildlife from picking it up.

**DEER MICE, *Peromyscus* spp.** - Deer Mouse Control in Forests: Spread bait evenly by hand, mechanical spreader, or aircraft at the rate of two pounds per acre through the area where seeding will later take place. Sufficient bait should be applied to last the mouse population a minimum of four days (preferably without rain). Bait application should precede the sowing of conifer seed by 10 days to 2 weeks.

**HOUSE MICE, *Mus musculus*** - Place tablespoon amounts (1/4 to 1/2 ounce) of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. Inspect stations daily and add bait as needed; increase the amount when bait in feeder is entirely consumed overnight. Replace moldy or old bait with fresh bait. The baits being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be 2 to 4 weeks.

Where continuous source of infestations is present, permanent bait stations should be established and the bait replenished as needed. Bait should be picked up and disposed of upon termination of control program.

# PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals

## CAUTION

Keep out of the reach of children and pets.  
If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

## ENVIRONMENTAL HAZARDS

This product is toxic to wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. Treated bait exposed on soil surface is hazardous to birds and other wildlife. Keep out of lakes, ponds, and streams.

## DIRECTIONS FOR USE

# GENERAL CLASSIFICATION

FOR DISTRIBUTION AND USE ONLY IN CALIFORNIA.

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling.

## STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food, or feed by storage or disposal.

**Container Disposal:** Dispose of in an incinerator or landfill approved for pesticide containers.

**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

## IMPORTANT

For best results, keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

Treated baits should be placed in locations not accessible to children, pets, non-target wildlife and domestic animals, or in tamperproof bait boxes.

Maintain bait supply for at least 15 days. Continue baiting until all signs of feeding have stopped.

Bait placements should be kept permanently to prevent new infestation.

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Inspect stations daily and add bait as needed; increase the amount when bait is entirely consumed overnight. Replace moldy or old bait with fresh bait. The bait being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals.

## RODENT BAIT

### DIPHACINONE TREATED GRAIN (0.005%)

#### ACTIVE INGREDIENT:

Diphacinone	
2-dihydroxyacetophenone	0.005%
3-indandione	99.995%
INERT INGREDIENTS	
TOTAL	100.000%

# KEEP OUT OF THE REACH OF CHILDREN

## CAUTION

### FIRST AID TREATMENT

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

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DEPARTMENT OF FOOD & AGRICULTURE  
CONTROL AND ERADICATION  
1220 N Street, Sacramento, CA 95814

## BAITING PROCEDURES

**NOTE:** Do not use in a manner that will contaminate feed or foodstuff.

### NORWAY RATS, *Rattus norvegicus*, ROOF RATS, *R. rattus*

Place 4 to 16 ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations in dry locations such as in concealed places, in corners, or along walls where rats feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks. For roof rats, put bait at ground floor and top floor or attic levels. For Norway rats put bait at or near ground level and at burrows and harborages.

**HOUSE MICE, *Mus musculus*** - Place two to four ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beeldingi*** - Bait boxes: Place one to five pounds of bait in a covered bait box in areas frequented by ground squirrels (near runway, burrows, etc.). Continue until all feeding ceases which may be one to four weeks. Initial acceptance may not occur until squirrels become accustomed to the bait box, which may be several days.

Bait boxes should have entrance holes large enough to admit squirrels but not larger animals. Secure bait stations so that they cannot be turned over.

**MUSKRATS, *Ondatra zibethica*** - Floating bait boxes: Exposure of anticoagulant baits in floating bait stations is a satisfactory method of muskrat control. Place one to five pounds in floating bait box. An uninterrupted supply of bait should be maintained as long as any bait is taken.

**JACKRABBITS (Black-tailed hare), *Lepus californicus*** - To facilitate bait removal and prevent spillage, covered self-dispensing feeders or nursery flats should be used. Place one to five pounds of bait in a covered self-dispensing feeder or nursery flat in areas frequented by rabbits, such as runways, resting or feeding areas. It may be necessary to move feeders to new locations to achieve bait acceptance. Bait should be exposed until all feeding ceases, which may be from one to four weeks.

Initial acceptance may not occur until rabbits become accustomed to the feeder station or nursery flat which may be several days.

Secure feeding stations so that they cannot be turned over.

Carcasses of poisoned rabbits should be picked up and disposed of by deep burying or burning.

**MEADOW MICE, *Microtus californicus*, *M. montanus*** - Lightly scatter tablespoon amounts (1/4 to 1/2 ounce) of bait near active burrows or in runways. Repeat treatment every other day for three treatments.

**WOOD RATS, *Neotoma* spp.** - Closed-box type anticoagulant bait stations are often filled by the wood rats with sticks and other debris. Open bait containers protected by inverting a crate or something similar over the bait may prove more practical.

Place 4 to 16 ounces of bait in a bait box or if in a shallow container cover with a protective crate or box. Bait stations should be located near existing wood rat runways or dens and generally spaced no further than 100 feet apart.

## PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals

### CAUTION

Keep out of the reach of children and pets.  
If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

### ENVIRONMENTAL HAZARDS

This product is toxic to wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. Treated bait exposed on soil surface is hazardous to birds and other wildlife. Keep out of lakes, ponds, and streams.

### DIRECTIONS FOR USE

## GENERAL CLASSIFICATION

FOR DISTRIBUTION AND USE ONLY IN CALIFORNIA.

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling.

### STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food, or feed by storage or disposal.

**Container Disposal:** Dispose of in an incinerator or landfill approved for pesticide containers.

**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

### IMPORTANT

For best results, keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

Treated baits should be placed in locations not accessible to children, pets, non-target wildlife and domestic animals, or in tamperproof bait boxes.

Maintain bait supply for at least 15 days. Continue baiting until all signs of feeding have stopped.

Bait placements should be kept permanently to prevent new infestation.

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Inspect stations daily and add bait as needed; increase the amount when bait is entirely consumed overnight. Replace moldy or old bait with fresh bait. The bait being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals.

### RODENT BAIT

#### CHLOROPHACINONE TREATED GRAIN (0.005%)

#### ACTIVE INGREDIENT:

Chlorophacinone  
2-[(p-chlorophenyl) phenyl-  
acetyl]-1,3 indandione ..... 0.005%

INERT INGREDIENTS ..... 99.995%

TOTAL ..... 100.000%

## KEEP OUT OF THE REACH OF CHILDREN

### CAUTION

#### FIRST AID TREATMENT

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

EPA SLN No. ....

Calif. Reg. No. ....

Net Contents ..... lbs.

CALIFORNIA  
DEPARTMENT OF FOOD & AGRICULTURE  
CONTROL AND EDUCATION  
1220 N Street, Sacramento, CA 95814

### BAITING PROCEDURES

NOTE: Do not use in a manner that will contaminate feed or foodstuff.

**NORWAY RATS, *Rattus norvegicus*, ROOF RATS, *R. rattus***  
Place 4 to 16 ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations in dry locations such as in concealed places, in corners, or along walls where rats feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks. For roof rats, put bait at ground floor and top floor or attic levels. For Norway rats put bait at or near ground level and at burrows and harborages.

**HOUSE MICE, *Mus musculus*** - Place two to four ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beldingi*** - Bait boxes: Place one to five pounds of bait in a covered bait box in areas frequented by ground squirrels (near runway, burrows, etc.). Continue until all feeding ceases which may be one to four weeks. Initial acceptance may not occur until squirrels become accustomed to the bait box, which may be several days.

Bait boxes should have entrance holes large enough to admit squirrels but not larger animals. Secure bait stations so that they cannot be turned over.

**MUSKRATS, *Ondatra zibethica*** - Floating bait boxes: Exposure of anticoagulant baits in floating bait stations is a satisfactory method of muskrat control. Place one to five pounds in floating bait box. An uninterrupted supply of bait should be maintained as long as any bait is taken.

**JACKRABBITS (Black-tailed hare), *Lepus californicus*** - To facilitate bait removal and prevent spillage, covered self-dispensing feeders or nursery flats should be used. Place one to five pounds of bait in a covered self-dispensing feeder or nursery flat in areas frequented by rabbits, such as runways, resting or feeding areas. It may be necessary to move feeders to new locations to achieve bait acceptance. Bait should be exposed until all feeding ceases, which may be from one to four weeks.

Initial acceptance may not occur until rabbits become accustomed to the feeder station or nursery flat which may be several days.

Secure feeding stations so that they cannot be turned over.

Carcasses of poisoned rabbits should be picked up and disposed of by deep burying or burning.

**MEADOW MICE, *Microtus californicus*, *M. montanus*** - Lightly scatter tablespoon amounts (1/4 to 1/2 ounce) of bait near active burrows or in runways. Repeat treatment every other day for three treatments.

**WOOD RATS, *Neotoma* spp.** - Closed-box type anticoagulant bait stations are often filled by the wood rats with sticks and other debris. Open bait containers protected by inverting a crate or something similar over the bait may prove more practical.

Place 4 to 16 ounces of bait in a bait box or if in a shallow container cover with a protective crate or box. Bait stations should be located near existing wood rat runways or dens and generally spaced no further than 100 feet apart.

## PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals

### CAUTION

Keep out of the reach of children and pets.  
If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

### ENVIRONMENTAL HAZARDS

This product is toxic to wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. Treated bait exposed on soil surface is hazardous to birds and other wildlife. Keep out of lakes, ponds, and streams.

### DIRECTIONS FOR USE

## GENERAL CLASSIFICATION

FOR DISTRIBUTION AND USE ONLY IN CALIFORNIA.

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling.

### STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food, or feed by storage or disposal.

**Container Disposal:** Dispose of in an incinerator or landfill approved for pesticide containers.

**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

### IMPORTANT

For best results, keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

Treated baits should be placed in locations not accessible to children, pets, non-target wildlife and domestic animals, or in tamperproof bait boxes.

Maintain bait supply for at least 15 days. Continue baiting until all signs of feeding have stopped.  
Bait placements should be kept permanently to prevent new infestation.

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Inspect stations daily and add bait as needed; increase the amount when bait is entirely consumed overnight. Replace moldy or old bait with fresh bait. The bait being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals.

### RODENT BAIT WARFARIN TREATED GRAIN (0.025%)

#### ACTIVE INGREDIENT

Warfarin	
3-(alpha-acetonylbenzyl)-	
4-hydroxycoumarin	0.025%
INERT INGREDIENTS	99.975%
TOTAL	100.000%

## KEEP OUT OF THE REACH OF CHILDREN

### CAUTION

#### FIRST AID TREATMENT

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

EPA SLN No. ....

Calif. Reg. No. ....

Net Contents ..... lbs.

CALIFORNIA  
DEPARTMENT OF FOOD & AGRICULTURE  
CONTROL AND ERADICATION  
1220 N Street, Sacramento, CA 95814

### BAITING PROCEDURES

NOTE: Do not use in a manner that will contaminate feed or foodstuff.

**NORWAY RATS, *Rattus norvegicus*, ROOF RATS, *R. rattus***  
Place 4 to 16 ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations in dry locations such as in concealed places, in corners, or along walls where rats feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks. For roof rats, put bait at ground floor and top floor or attic levels. For Norway rats put bait at or near ground level and at burrows and harborages.

**HOUSE MICE, *Mus musculus*** Place two to four ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beeldingi***  
Bait boxes: Place one to five pounds of bait in a covered bait box in areas frequented by ground squirrels (near runway, burrows, etc.). Continue until all feeding ceases which may be one to four weeks. Initial acceptance may not occur until squirrels become accustomed to the bait box, which may be several days.

Bait boxes should have entrance holes large enough to admit squirrels but not larger animals. Secure bait stations so that they cannot be turned over.

**MUSKRATS, *Ondatra zibethica*** - Floating bait boxes: Exposure of anticoagulant baits in floating bait stations is a satisfactory method of muskrat control. Place one to five pounds in floating bait box. An uninterrupted supply of bait should be maintained as long as any bait is taken.

**JACKRABBITS (Black-tailed hare), *Lepus californicus*** - To facilitate bait removal and prevent spillage, covered self-dispensing feeders or nursery flats should be used. Place one to five pounds of bait in a covered self-dispensing feeder or nursery flat in areas frequented by rabbits, such as runways, resting or feeding areas. It may be necessary to move feeders to new locations to achieve bait acceptance. Bait should be exposed until all feeding ceases, which may be from one to four weeks.

Initial acceptance may not occur until rabbits become accustomed to the feeder station or nursery flat which may be several days.

Secure feeding stations so that they cannot be turned over.

Carcasses of poisoned rabbits should be picked up and disposed of by deep burying or burning.

**MEADOW MICE, *Microtus californicus*, *M. montanus*** - Lightly scatter tablespoon amounts (1/4 to 1/2 ounce) of bait near active burrows or in runways. Repeat treatment every other day for three treatments.

**WOOD RATS, *Neotoma* spp.** - Closed-box type anticoagulant bait stations are often filled by the wood rats with sticks and other debris. Open bait containers protected by inverting a crate or something similar over the bait may prove more practical.

Place 4 to 16 ounces of bait in a bait box or if in a shallow container cover with a protective crate or box. Bait stations should be located near existing wood rat runways or dens and generally spaced no further than 100 feet apart.

## PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals

### CAUTION

Keep out of the reach of children and pets. If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

### ENVIRONMENTAL HAZARDS

This product is toxic to wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. Treated bait exposed on soil surface is hazardous to birds and other wildlife. Keep out of lakes, ponds, and streams.

### DIRECTIONS FOR USE

## GENERAL CLASSIFICATION

FOR DISTRIBUTION AND USE ONLY IN CALIFORNIA.

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling.

### STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food, or feed by storage or disposal.

**Container Disposal:** Dispose of in an incinerator or landfill approved for pesticide containers.

**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

### IMPORTANT

For best results, keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

Treated baits should be placed in locations not accessible to children, pets, non-target wildlife and domestic animals, or in tamperproof bait boxes.

Maintain bait supply for at least 15 days. Continue baiting until all signs of feeding have stopped.

Bait placements should be kept permanently to prevent new infestation.

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Inspect stations daily and add bait as needed; increase the amount when bait is entirely consumed overnight. Replace moldy or old bait with fresh bait. The bait being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals.

### RODENT BAIT PIVAL TREATED GRAIN (0.025%)

#### ACTIVE INGREDIENT:

Pival	
2-pivalyl-1,3-indandione	0.025%
INERT INGREDIENTS	99.975%
TOTAL	100.000%

## KEEP OUT OF THE REACH OF CHILDREN

### CAUTION

#### FIRST AID TREATMENT

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

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Net Contents ..... lbs.

CALIFORNIA  
DEPARTMENT OF FOOD & AGRICULTURE  
CONTROL AND ERADICATION  
1220 N Street, Sacramento, CA 95814

### BAITING PROCEDURES

NOTE: Do not use in a manner that will contaminate feed or foodstuff.

**NORWAY RATS, *Rattus norvegicus*, ROOF RATS, *R. rattus*** - Place 4 to 16 ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations in dry locations such as in concealed places, in corners, or along walls where rats feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks. For roof rats, put bait at ground floor and top floor or attic levels. For Norway rats put bait at or near ground level and at burrows and harborages.

**HOUSE MICE, *Mus musculus*** - Place two to four ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beeldingi*** - Bait boxes: Place one to five pounds of bait in a covered bait box in areas frequented by ground squirrels (near runway, burrows, etc.). Continue until all feeding ceases which may be one to four weeks. Initial acceptance may not occur until squirrels become accustomed to the bait box, which may be several days.

Bait boxes should have entrance holes large enough to admit squirrels but not larger animals. Secure bait stations so that they cannot be turned over.

**MUSKRATS, *Ondatra zibethica*** - Floating bait boxes: Exposure of anticoagulant baits in floating bait stations is a satisfactory method of muskrat control. Place one to five pounds in floating bait box. An uninterrupted supply of bait should be maintained as long as any bait is taken.

**JACKRABBITS (Black-tailed hare), *Lepus californicus*** - To facilitate bait removal and prevent spillage, covered self-dispensing feeders or nursery flats should be used. Place one to five pounds of bait in a covered self-dispensing feeder or nursery flat in areas frequented by rabbits, such as runways, resting or feeding areas. It may be necessary to move feeders to new locations to achieve bait acceptance. Bait should be exposed until all feeding ceases, which may be from one to four weeks.

Initial acceptance may not occur until rabbits become accustomed to the feeder station or nursery flat which may be several days.

Secure feeding stations so that they cannot be turned over.

Carcasses of poisoned rabbits should be picked up and disposed of by deep burying or burning.

**MEADOW MICE, *Microtus californicus*, *M. montanus*** - Lightly scatter tablespoon amounts (1/4 to 1/2 ounce) of bait near active burrows or in runways. Repeat treatment every other day for three treatments.

**WOOD RATS, *Neotoma* spp.** - Closed-box type anticoagulant bait stations are often filled by the wood rats with sticks and other debris. Open bait containers protected by inverting a crate or something similar over the bait may prove more practical.

Place 4 to 16 ounces of bait in a bait box or if in a shallow container cover with a protective crate or box. Bait stations should be located near existing wood rat runways or dens and generally spaced no further than 100 feet apart.

## PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals

### CAUTION

Keep out of the reach of children and pets.  
If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

### ENVIRONMENTAL HAZARDS

This product is toxic to wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. Treated bait exposed on soil surface is hazardous to birds and other wildlife. Keep out of lakes, ponds, and streams.

## DIRECTIONS FOR USE GENERAL CLASSIFICATION

FOR DISTRIBUTION AND USE ONLY IN CALIFORNIA.

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling.

### STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food, or feed by storage or disposal.

**Container Disposal:** Dispose of in an incinerator or landfill approved for pesticide containers.

**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

### IMPORTANT

For best results, keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

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Maintain bait supply for at least 15 days. Continue baiting until all signs of feeding have stopped.

Bait placements should be kept permanently to prevent new infestation.

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Inspect stations daily and add bait as needed; increase the amount when bait is entirely consumed overnight. Replace moldy or old bait with fresh bait. The bait being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals.

## RODENT BAIT FUMARIN TREATED GRAIN (0.025%)

### ACTIVE INGREDIENT:

Fumarin	
3-(alpha-acetonylfurfuryl)-	
4-hydroxycoumarin	0.025%
INERT INGREDIENTS	99.975%
TOTAL	100.000%

## KEEP OUT OF THE REACH OF CHILDREN

### CAUTION

#### FIRST AID TREATMENT

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

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Calif. Reg. No. ....

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1220 N Street, Sacramento, CA 95814

## BAITING PROCEDURES

NOTE: Do not use in a manner that will contaminate feed or foodstuff.

**NORWAY RATS, *Rattus norvegicus*, ROOF RATS, *R. rattus*** - Place 4 to 16 ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations in dry locations such as in concealed places, in corners, or along walls where rats feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks. For roof rats, put bait at ground floor and top floor or attic levels. For Norway rats put bait at or near ground level and at burrows and harborages.

**HOUSE MICE, *Mus musculus*** - Place two to four ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beirdingi*** - Bait boxes: Place one to five pounds of bait in a covered bait box in areas frequented by ground squirrels (near runway, burrows, etc.). Continue until all feeding ceases which may be one to four weeks. Initial acceptance may not occur until squirrels become accustomed to the bait box, which may be several days.

Bait boxes should have entrance holes large enough to admit squirrels but not larger animals. Secure bait stations so that they cannot be turned over.

**MUSKRATS, *Ondatra zibethica*** - Floating bait boxes: Exposure of anticoagulant baits in floating bait stations is a satisfactory method of muskrat control. Place one to five pounds in floating bait box. An uninterrupted supply of bait should be maintained as long as any bait is taken.

**JACKRABBITS (Black-tailed hare), *Lepus californicus*** - To facilitate bait removal and prevent spillage, covered self-dispensing feeders or nursery flats should be used. Place one to five pounds of bait in a covered self-dispensing feeder or nursery flat in areas frequented by rabbits, such as runways, resting or feeding areas. It may be necessary to move feeders to new locations to achieve bait acceptance. Bait should be exposed until all feeding ceases, which may be from one to four weeks.

Initial acceptance may not occur until rabbits become accustomed to the feeder station or nursery flat which may be several days.

Secure feeding stations so that they cannot be turned over.

Carcasses of poisoned rabbits should be picked up and disposed of by deep burying or burning.

**MEADOW MICE, *Microtus californicus*, *M. montanus*** - Lightly scatter tablespoon amounts (1/4 to 1/2 ounce) of bait near active burrows or in runways. Repeat treatment every other day for three treatments.

**WOOD RATS, *Neotoma* spp.** - Closed-box type anticoagulant bait stations are often filled by the wood rats with sticks and other debris. Open bait containers protected by inverting a crate or something similar over the bait may prove more practical.

Place 4 to 16 ounces of bait in a bait box or if in a shallow container cover with a protective crate or box. Bait stations should be located near existing wood rat runways or dens and generally spaced no further than 100 feet apart.



## PRECAUTIONARY STATEMENTS

### Hazards to Humans and Domestic Animals

#### CAUTION

Keep out of the reach of children and pets. If swallowed by human beings, domestic animals or pets, this material may reduce the clotting ability of the blood and cause bleeding. In such cases, intravenous and oral administration of vitamin K, combined with blood transfusions, is indicated as in the case of hemorrhage caused by overdoses of bis-hydroxycoumarin (Dicumarol).

#### ENVIRONMENTAL HAZARDS

This product is toxic to wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. Treated bait exposed on soil surface is hazardous to birds and other wildlife. Keep out of lakes, ponds, and streams.

#### DIRECTIONS FOR USE

## GENERAL CLASSIFICATION

FOR DISTRIBUTION AND USE ONLY IN CALIFORNIA.

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling.

### STORAGE AND DISPOSAL

**Prohibitions:** Do not contaminate water, food, or feed by storage or disposal.

**Container Disposal:** Dispose of in an incinerator or landfill approved for pesticide containers.

**General:** Consult Federal, State or local disposal authorities for approved alternative procedures such as limited open burning.

#### IMPORTANT

For best results, keep this product in a closed container, free from odors which may contaminate the bait and reduce acceptability.

Treated baits should be placed in locations not accessible to children, pets, non-target wildlife and domestic animals, or in tamperproof bait boxes.

Maintain bait supply for at least 15 days. Continue baiting until all signs of feeding have stopped.

Bait placements should be kept permanently to prevent new infestation.

A single feeding of this anticoagulant bait will not control rodents. Bait must be eaten at several feedings on five or more successive days with no periods longer than 48 hours between feedings.

Inspect stations daily and add bait as needed; increase the amount when bait is entirely consumed overnight. Replace moldy or old bait with fresh bait. The bait being replaced should immediately be disposed of in such a manner to prevent ingestion by children, pets, wildlife and domestic animals.

#### RODENT BAIT

### WARFARIN-P TREATED GRAIN (0.025%)

#### ACTIVE INGREDIENT:

Sulfaquinoxaline [N-(2-quin-oxalyl) sulfamylamide] ..... 0.025%

Warfarin 3-(alpha-acetonyl-benzyl)-4-hydroxycoumarin ..... 0.025%

INERT INGREDIENTS ..... 99.950%

TOTAL ..... 100.000%

## KEEP OUT OF THE REACH OF CHILDREN

### CAUTION

#### FIRST AID TREATMENT

Call a physician. If victim is conscious, induce vomiting by giving a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Keep patient quiet. See side panel for additional precautionary statements.

Establishment No. ....

EPA SLN No. ....

Calif. Reg. No. ....

Net Contents ..... lbs.

CALIFORNIA  
DEPARTMENT OF FOOD & AGRICULTURE  
CONTROL AND ERADICATION  
1220 N Street, Sacramento, CA 95814

#### BAITING PROCEDURES

NOTE: Do not use in a manner that will contaminate feed or foodstuff.

**NORWAY RATS, *Rattus norvegicus*, ROOF RATS, *R. rattus*** - Place 4 to 16 ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations in dry locations such as in concealed places, in corners, or along walls where rats feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks. For roof rats, put bait at ground floor and top floor or attic levels. For Norway rats put bait at or near ground level and at burrows and harborages.

**HOUSE MICE, *Mus musculus*** - Place two to four ounces of bait in bait box or shallow container, preferably in protected feeder stations. Place bait stations at 8 to 12 foot intervals in dry locations such as in concealed places, in corners, or along walls where house mice feed, drink or frequent. An uninterrupted supply of bait should be maintained as long as any bait is taken which may be two to four weeks.

**GROUND SQUIRRELS, *Spermophilus beecheyi*, *S. beldingi*** - Bait boxes: Place one to five pounds of bait in a covered bait box in areas frequented by ground squirrels (near runway, burrows, etc.). Continue until all feeding ceases which may be one to four weeks. Initial acceptance may not occur until squirrels become accustomed to the bait box, which may be several days.

Bait boxes should have entrance holes large enough to admit squirrels but not larger animals. Secure bait stations so that they cannot be turned over.

**MUSKRATS, *Ondatra zibethica*** - Floating bait boxes: Exposure of anticoagulant baits in floating bait stations is a satisfactory method of muskrat control. Place one to five pounds in floating bait box. An uninterrupted supply of bait should be maintained as long as any bait is taken.

**JACKRABBITS (Black-tailed hare), *Lepus californicus*** - To facilitate bait removal and prevent spillage, covered self-dispensing feeders or nursery flats should be used. Place one to five pounds of bait in a covered self-dispensing feeder or nursery flat in areas frequented by rabbits, such as runways, resting or feeding areas. It may be necessary to move feeders to new locations to achieve bait acceptance. Bait should be exposed until all feeding ceases, which may be from one to four weeks.

Initial acceptance may not occur until rabbits become accustomed to the feeder station or nursery flat which may be several days.

Secure feeding stations so that they cannot be turned over.

Carcasses of poisoned rabbits should be picked up and disposed of by deep burying or burning.

**MEADOW MICE, *Microtus californicus*, *M. montanus*** - Lightly scatter tablespoon amounts (1/4 to 1/2 ounce) of bait near active burrows or in runways. Repeat treatment every other day for three treatments.

**WOOD RATS, *Neotoma* spp.** - Closed-box type anticoagulant bait stations are often filled by the wood rats with sticks and other debris. Open bait containers protected by inserting a crate or something similar over the bait may prove more practical.

Place 4 to 16 ounces of bait in a bait box or if in a shallow container cover with a protective crate or box. Bait stations should be located near existing wood rat runways or dens and generally spaced no further than 100 feet apart.